

What is claimed is:

1. A hydrogen supply unit comprising:

reformation means for reforming a source gas containing hydrocarbons to generate a hydrogen-rich reformed gas;

a fuel cell for generating electric power by use of said reformed gas; and

purification means for purifying hydrogen from the exhaust gas discharged from said fuel cell.

2. The hydrogen supply unit according to claim 1, wherein said purification means conducts purification of hydrogen by use of the membrane separation method based on a hydrogen permeable membrane and by use of the pressure swing adsorption method.

3. The hydrogen supply unit according to claim 1, wherein said purification means comprises:

a membrane separator for conducting membrane separation based on a hydrogen permeable membrane;

a pressurizer for use in purification for pressurizing the gas purified by said membrane separator; and

an adsorber for purifying the gas pressurized by said pressurizer for use in purification by use of the pressure swing adsorption method.

4. The hydrogen supply unit according to claim 1, wherein said purification means comprises:

a membrane separator for conducting membrane separation based on a hydrogen permeable membrane provided with a function for pressurizing hydrogen; and

an adsorber for purifying, by use of the pressure swing adsorption method, the gas pressurized by said membrane separator.

5. The hydrogen supply unit according to any one of claims 2, 3, and 4, wherein the membrane separator for conducting the membrane separation method in said purification means comprises electrodes respectively on both surfaces of said hydrogen permeable membrane, and conducts the separation of hydrogen by providing an electrical potential difference between the front and back surfaces of said hydrogen permeable membrane to make hydrogen ions permeate said membrane.

6. The hydrogen supply unit according to any one of claims 2, 3, and 4, wherein the adsorber for conducting said pressure swing adsorption method is provided with a plurality of containers charged with an adsorbent, and purifies hydrogen by making the gas to be purified pass through the plurality of containers while varying the pressure of the gas being purified.

7. The hydrogen supply unit according to claim 2, wherein said reformation means reforms, by heating with the aid of heating means that uses the source gas as fuel, said source gas, and uses when reforming, as the fuel for said heating

means, the offgas separated by said membrane separation method, in addition to said source gas; and said fuel cell generates electric power by using the offgas, separated by said pressure swing adsorption method, in addition to said reformed gas.

8. The hydrogen supply unit according to claim 3 or 4, wherein said reformation means reforms, by heating with the aid of the heater that uses the source gas as fuel, said source gas, and uses when reforming, as the fuel for said heater, the offgas separated by said membrane separator, in addition to said source gas; and said fuel cell generates electric power by using the offgas separated by said adsorber, in addition to said reformed gas.

9. The hydrogen supply unit according to any one of claims 1 to 8, comprising storage means for storing the hydrogen purified by said purification means.

10. The hydrogen supply unit according to claim 9, wherein said storage means comprises:

a pressurization means for use in storage for pressurizing the hydrogen gas to be stored, and

connection means for being connected to a vehicle that uses hydrogen as fuel.

11. The hydrogen supply unit according to any one of claims 3, 4 and 7, comprising storage means for storing the hydrogen

purified by said purification means, wherein said storage means comprises:

a first tank for storing the gas supplied from said adsorber;

a pressurizer for use in storage for pressurizing the gas supplied from said first tank;

a second tank for storing the gas supplied from said pressurizer for use in storage; and

a connector for connecting said second tank to a vehicle that uses hydrogen as fuel.